

AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

Claim 1. Cancelled

Claim 2. (Currently Amended) A method as claimed in claim 4 further comprising a step of A method for enabling system layout and testing (SLAT) and configuration management of nodes in a consolidated network element (CNE) comprising steps of:

inserting into an overhead part of at least one data frame in each data stream sent from a first to a second interconnected node in the CNE, an identifier of equipment that controls the insertion, a transmit port that transmitted the data frame, a strand through which the data frame was sent and, an equipment type of the identified equipment;

transmitting each of the data frames from respective transmit ports, through respective strands, to respective receive ports of the second node;

receiving the data frames at the respective receive ports;

extracting the overhead parts and processing the overhead parts to assemble messages useful for SLAT and configuration management; and

using the equipment type for automatically setting at least one port parameter setting of the receive port at which the message was received.

Claim 3. (Currently Amended) A method as claimed in claim 4 further comprising a step of using the respective strand identifiers to verify an integrity of a strand over which the data frames were transmitted.

Claim 4. (Original) A method as claimed in claim 3 further comprising a step of verifying a sequence of the strands in a strand bundle interconnecting the first and second nodes.

Claim 5 (Original) A method as claimed in claim 4 further comprising a step of performing completeness verification for groups of strands in the strand bundle, and the messages transmitted over last strand in a group of strands that form a consolidated channel include final strand tags.

Claim 6. (Original) A method as claimed in claim 5 further comprising a step of reporting to a management interface a detected broken strand, a failed verification of a strand bundle sequence, and failed contiguity verification for strands in the strand bundle.

Claim 7. (Currently Amended) A method as claimed in claim ~~4~~² wherein the step of extracting and processing the overhead parts to assemble respective messages comprises a step of using respective port and equipment identifiers received at a plurality of respective receive ports to perform at least one of: verification of adherence to equipping rules; contiguity verification of strands in strand bundles; and generation of a connectivity map of at least some of the collocated nodes.

Claim 8. (Original) A method as claimed in claim 7 further comprising a step of reporting to a management interface at least one of:

- a detected conflict with programmed equipping rules that are associated with an equipment type of the identified equipment;
- a breach of contiguity bundles of optical fiber that are assigned to be grouped; and
- the generated connectivity map.

Claim 9. (Currently Amended) A method as claimed in claim ~~4~~² wherein the nodes are adapted to perform bidirectional transport of data streams, and the method further comprises steps of:

- extracting at least equipment and port identifiers from a message received at a receive port of a node;
- inserting the respective equipment and port identifiers into a reply to the message; and
- transmitting the reply using a communications channel in the overhead part of a data frame sent from a transmit port of the node, the transmit port being a port paired with the receive port from which the message was received;
- whereby a correlation of the reply received at a port with identifiers assigned to the port and sent in the message enables the node that receives the reply to verify that an inter-node link forms a bidirectional link that conforms with the intended pairing of ports in the CNE.

Claim 10. (Original) A method as claimed in claim 9 further comprising a step of reporting to a management interface any detected mismatch between the intended pairing of ports in the interconnected nodes and the bidirectional links discovered between the interconnected nodes.

Claim 11. (Original) A method as claimed in claim 9 wherein the data frames comprise frames of one of a synchronous optical network (SONET) and a synchronous digital hierarchy (SDH) protocol, and the step of inserting into overhead parts comprises a step of inserting respective bits of the message into a section trace formed of consecutive J0 bytes in a section/regenerator overhead portion of the frames.

Claim 12. Cancelled

Claim 13. (Currently Amended) A message as claimed in claim 13 wherein the message is carried in a overhead part of at least one data frame.

Claim 14. (Original) A message as claimed in claim 13 wherein the data frames comprise frames of one of a synchronous optical network (SONET) and a synchronous digital hierarchy (SDH) protocol, and the message is sent one byte per frame in consecutive J0 bytes of the frames.

Claim 15. (Original) A message as claimed in claim 13 wherein the equipment identifier identifies one of a shelf controller for the transmit port and the sending node.

Claim 16. (Original) A message as claimed in claim 15 wherein the equipment identifier comprises a media access control (MAC) address.

Claim 17. (Currently Amended) A message as claimed in claim 15 wherein the equipment type identifier A message for enabling inter-node connection discovery between interconnected nodes of a consolidated network element (CNE) that convey data frames with overhead and payload parts, the nodes being interconnected by bundles of optical fiber strands, the message being conveyed from a sending node, through a strand, to a receiving node, the message comprising:

an equipment identifier assigned to equipment of the sending node that controls generation of the message;

a port identifier that identifies a transmit port of the sending node that transmits the message;

a strand identifier, identifying a strand over which the message is transmitted; and
an equipment type identifier that identifies a category of the control equipment and
enables a retrieval of sufficient information respecting a sender of the message
to ensure that the receiving node can determine port settings to apply to the
receive port at which the message was received.

Claim 18. (Original) A message as claimed in claim 17 wherein the information defines a protection scheme, and connection management requirements for the receive port.

Claim 19. (Original) A message as claimed in claim 15 further comprising a final strand tag field used to facilitate contiguity and sequence testing of groups of strands that form a consolidated channel.

Claim 20. (Currently Amended) A method for automatically provisioning a receive port of a second node adapted to receive data frames with overhead and payload parts from a transmit port of a first node, the first and second nodes being interconnected in a consolidated network element (CNE), the method comprising steps of:

formulating and inserting a message of a predefined format into at least one predetermined byte of the overhead part of at least one data frame, the message containing information respecting the first node including an identifier of equipment controls the insertion and an equipment type of the identified equipment;

transmitting the at least one data unit to a receive port of the second node;
extracting the message from the at least one data frame at the receive port; and
using the information equipment type in the message to automatically set at least one port configuration parameter setting of the receive port.

Claim 21. (Currently Amended) A method as claimed in claim 19-20 wherein the step of using the information comprises a step of provisioning the receive port to conform to connection management requirements.